TITLE

MOP BUCKET WITH MOP WRINGER ATTACHMENT

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a mop bucket with an associated mop wringer and more particularly to a mop bucket and separable mop wringer effective to wringer at a variety of mop shapes and sizes.

2. Description of the Prior Art

Mop bucket and wringer attachment are known in the art of the type which are positionable on the edge of a bucket, pail or the like, and which through the movement of an arm activate a pressure plate to squeeze water out of the mop and into the bucket. In many instances the connection between the arm and the pressure plate is quite complex, costly to manufacture, difficult to assemble, and fails to provide a uniform force on the plate to efficiently remove water from the mop.

Typically, the pressure plate traps the mop against and squeezes it against a surface which has apertures therein and which is positioned above the confines of the bucket so that the water from the mop passes through the apertures and into the bucket. During this action, it is important to direct the water downwardly into the bucket, otherwise, if it were permitted to pass straight through the apertures, the water could miss the bucket

and land on the surface being cleaned. Prior art efforts to direct the water downwardly into the bucket have generally resulted in a decrease of the open space in the apertured surface thereby causing a decrease in throughput efficiency.

Moreover, such prior art mop wringers have deficiencies which significantly increase the cost. Many mop wringers require that some sort of water dam device be positioned behind the pressure plate so that if some water being squeezed out of the mop travels around the pressure plate, the water dam will prevent it from splashing outside the confines of the bucket. Such are often extravagant, complex, separate parts which significantly add to the ultimate cost of the product.

SUMMARY OF THE INVENTION

It is an object of the present invention to produce a mop wringer attachment which may be economically manufactured having a minimum amount of material for the strength needed to uniformly wring water out of mops.

It is another object of the present invention to produce a mop wringer attachment which has a minimum number of operating parts.

It is a further object of the present invention to produce a mop wringer attachment with a rack and pinion assembly connecting the operating handle to the pressure jaws to provide a uniform mop wringing force across the entire width of the pressure plate.

It is an additional object of the present invention to produce a mop wringer attachment in which the mop is squeezed against surfaces having apertures therein which direct the water downwardly into the bucket without adversely effecting the throughput efficiency.

The above objects of the invention may be readily achieved by a mop bucket and wringer apparatus for wringing fluid from a mop comprising a mop bucket having an open interior terminating in an upwardly facing opening defined by a marginal rim; a mop wringer including means for selective attachment to the marginal rim of the bucket, an upwardly opening wall for receiving a mop and defined by front, rear, side, and bottom walls at least some of which are provided with passageways to allow fluids to pass therethrough, a pair of pressure jaws, a rack mounting the pressure jaws in a spaced apart horizontal disposition whereby vertical movement of the rack causes relative movement of the pressure jaws toward and away from one another, a pinion affixed to a side wall of the wringer for effecting movement of the rack and the associated pressure jaws, and a spring means normally urging the pinion in a position to cause the pressure jaws to be moved away from one another.

BRIEF DESCRIPTION OF THE DRAWINGS

The above, as well as other, objects and advantages of the invention will become manifest to one skilled in

the art from reading the following detailed description of a preferred embodiment of the invention when considered in the light of the accompanying drawings, a wheel:

Fig. 1 is a perspective view of a mop bucket with a mop wringer attachment;

Fig. 2 is an exploded perspective view of the apparatus illustrated in Fig 1;

Fig. 3 is a rear elevational view of the mop wringer illustrated in Figs. 1 and 2;

Fig. 4 is a side elevational view of the mop wringer illustrated in Figs. 1, 2, and 3;

Fig. 5 is a front elevational view of the mop wringer illustrated in Figs. 1, 2, 3, and 4;

Fig. 6 is an exploded perspective view of the mop wringer illustrated in Figs. 1 and 2 in the previously described figures;

Fig. 7 is a side elevational view of the mop wringer drive mechanism illustrated in Fig. 6;

Fig. 8 is a side elevational view of the mop wringer illustrated in Figs. 6 and 7 showing the operating lever and associated mop wringer apparatus in a fully closed and mop wringing position;

Fig. 9 is a front elevational view of the mop bucket illustrated in Figs. 1 and 2;

Fig. 10 is a rear elevational view of the mop bucket illustrated in Figs. 1 and 2;

Fig. 11 is a side elevational view of the mop bucket illustrated in Figs. 1 and 2;

Fig. 12 is a sectional view of the mop bucket illustrated in Fig. 9 taken along line 12-12 thereof;

Fig. 13 is a perspective view of a mop bucket with a mop wringer attachment similar to that illustrated in Fig. 1, incorporating an embodiment of the mop wringer having a side impact wringer attachment;

Fig. 14 is an exploded partial perspective view of the apparatus illustrated in Fig. 13.

Fig. 15 is a partial perspective view of the mop wringer illustrated in Figs. 13 and 14;

Sub A1 Fig. 16 is a side elevational view of the mop wringer drive mechanism illustrated in Fig. 15;

Sub A2 Fig. 17 is a side elevational view of the mop wringer illustrated in Figs. 15 and 16 showing the operating lever and associated mop wringer apparatus in a fully closed and mop wringing position; and

Fig. 18 is a perspective view of a mop bucket with a mop wringer attachment similar to that illustrated in Figs. 1 and 13, incorporating an embodiment of the mop wringer having a front impact wringer attachment.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT OF THE INVENTION

Figs. 1 and 2 illustrate a mop bucket 10 with an associated mop wringer 12 selectively attachable thereto. The wringer 12 is shown in an open position and is ready to receive a mop. In the preferred embodiment, the wringer 12 includes first and second perforated pressure jaws 14 and 16 which are received within the interior of the wringer 12. The interior of the wringer 12 is defined by a perforated front wall 18, a perforated rear wall 20, a perforated bottom wall 22, and spaced apart side walls 24, 26.

The side walls 24, 26 are provided respective outwardly extending rims 28,30 as clearly shown in Figs. 1, 2, and 6. Suitably shaped covers 32, 34 as shown in Figs. 1, 2, 4, and 6 are provided to enclose the space generally defined by the outer surfaces of the side walls 24, 26 and the respective rims 28, 30. The covers 32, 34 are secured in place in a conventional manner by suitable threaded fasteners, not shown. The covers 32, 34 are provided with laterally outwardly extending rims 36, 38, respectively which are dimensioned to fit snugly within the inner surfaces of the rims 28, 30, respectively.

It will be noted from an examination of Figs. 7 and 8, the pressure jaws 14 and 16 are provided with outwardly extending extensions 14′ and 16′, respectively. The extensions 14′ and 16′ are adjusted

to extend through slots 40, 42 formed in the respective side walls 24, 26. As clearly illustrated in Figs. 7 and 8, the slots 40 and 42 generally extend vertically and terminate in upper oppositely extending slot extensions. As will be discussed in greater detail hereinafter, the normal starting positions of the pressure jaws 14 and 16 are shown in Fig. 7, while the completed wringing position of the jaws 14 and 16 is shown in Fig. 8.

The mechanism for driving the pressure jaws 14 and 16 includes a pair of pinions 44 and 46 mounted on stub axles 48 and 50, respectively on opposite side walls 24 and 26. The stub axles 48 and 50 extend in opposite directions from a main pinion arm 52 which includes an upwardly extending operating lever 54.

The pressure jaws 14 and 16 are coupled to the pinions 44 and 46 through inverted T-shaped racks 56 and 58, respectively. The vertically aligned teeth of the racks 56 and 58 are engageable with the teeth of the respective pinions 44 and 46. As is clearly apparent in Figs. 7 and 8, the side wall 24 is provided with spaced apart ribs 60 and 62 which effectively receive and guide the up and down movement of the leg section of the inverted T-shaped racks 56. Similar spaced apart ribs are formed to extend outwardly from the opposite side wall 26.

Elastic cords 64, 66 such as, for example, bungee cords, are employed to constantly urge the pinions 44

and 46 respectively and the associated operating lever 54 in the normal vertical position, as illustrated in Figs. 3 to 7 inclusive. One end of each of the cords 64, 66 is connected in any suitable manner to the respective side wall 24, 26. The other end of each of the cords 64, 66 is attached to the respective pinion 44, 46. To assist in guiding the cords 64, 66 during the rotation of the respective pinions, the pinions 44, 46 are provided with outwardly extending rim walls 68, 70, respectively, It will be appreciated that substantially all of the operating mechanism of the mop wringer assembly thus far discussed may be formed of a material which will not oxidize or rust lending to enhanced life duty cycle of the equipment, as well as render the equipment properties tending to maintain a cleanliness in fact and in appearance.

The mop wringer 12 is further provided with an outwardly extending forward flange 72 having several spaced apart notches 74 adapted to receive and assist in holding a mop handle in an upward position within an associated mop bucket as will become readily apparent hereinafter.

It will be noted that the mop wringer 12 is designed to rest upon the mop bucket 10. To facilitate such relationship, the distance between the lower portions of the outermost surfaces of the scale walls 24 and 26 is slightly less than the receiving portion of the mop bucket 10. As will be apparent from viewing

Figs. 1, 2, 3, 5, and 6, front and rear terminal ends of the rims 28 and 30 are notched inwardly so that the lowermost extending rims 36 and 38 may rest upon the uppermost marginal edge of the mop bucket 10. Further, the rear wall 20 of the mop wringer 12 is provided with downwardly extending spaced apart legs 76 which are guided into slots 78 during the downward movement of the mop wringer 12 during the assemblage thereof on the mop bucket 10.

The mop bucket 10, illustrated in Figures 1, 2, and 9 through 12, has opposed spaced apart side walls 80, 82 which tend to converge at the rear to meet with a rear wall 84. A front wall 86 is integral with the front edges of the side walls 80, 82. The front wall 86 is provided with an outwardly curved portion 88 shaped to form a pouring spout 91 to facilitate the discharge of dirty water therefrom as will be explained hereinafter. The side walls 80, 82, the rear wall 84, and the front wall 86 cooperate with a stepped bottom wall 90 to define a space for containing washing liquid and for receiving the mop wringer 12. A handle 92 and wheels 94 are provided for conveniently carrying and moving the mop bucket 10.

The uppermost marginal edges of the side walls 80, 82, the rear wall 84, and the front wall 86 are turned outwardly and downwardly to form an upper edge 96. Slots 98 are formed in the upper edge 96 at the convergence of the side walls 80, 82. The slots 98 are

effective to receive and store the blades of scraping tools used in the cleaning procedures in the mop bucket 10 and mop wringer 12 of the invention.

As is apparent from an examination of Fig. 13, the bottom wall 90 is typically stepped as at 100 to create a slightly deeper bottom at the rear of the mop bucket 10 to collect particulate contaminants and militate against the commingling of such contaminants with the cleaner liquid in the forward portion of the mop bucket 10 during use of the assembly.

A handle 102 is formed in a recess in the outer surface of the rear wall 84. The handle 102 is useful in dumping the contents of the mop bucket 10. The dumping may be achieved by lifting the mop bucket 10 and placing the outwardly extending edge 96 over the rim of a toilet, for example, and then lifting the rear of the mop bucket 10 by the handle 102, thus effectively pouring the contents of the mop bucket 10 into the toilet until the contents are completely discharged therefrom.

It will be understood that the major components of the structure described in the description may be manufactured from an elastic material such as preferred resin, for example polypropylene. A mop bucket and mop wringer assembly in which the components may be readily formed of a plastic material results in a finished commercial product which may be readily cleaned, will remain clean for extended periods, and will eliminate

the occurrence of rusty parts which would be present through the use of metal parts capable of oxidation.

A typical cleaning operation utilizing the present mop bucket and mop wringer apparatus includes the following steps: 1) filling the mop bucket 10 with the desired quantity of washing liquid which is typically water having a detergent dissolve therein; 2) placing the mop wringer 12 on the edge 96 of the mop bucket 10 such that the legs 76 of the wringer 12 are suitably received within the slots 78; 3) permitting the wringer 12 to be lowered into the interior space of the mop bucket 10 until resting contact is made with the rear portion of the upper edge 96 of the mop bucket 10. At this stage, the lower edge of the covers 32 and 34 are disposed adjacent the upper edge 96 of the mop bucket 10. The side, rear, and front walls of the mop wringer 12 containing any perforations or slots are now below the upper edge of the mop bucket. Thus, any liquid squeezed from the mop during the wringing operation will remain in the mop bucket and not be spilled onto the adjacent floor surface; 4) a mop is dipped into the clean washing liquid contained into the mop bucket 10; 5) the liquid containing mop is removed from the mop bucket 10 and moved over the surface of the floor to be cleaned; 6) insert the dirty mop into the mop wringer 12 between the pressure jaws 14 and 16; 7) manually move the operating lever 54 from the position illustrated in Fig. 7 to the position illustrated in Fig. 8 causing the

pressure jaws to move downwardly and inwardly toward one another to expel the dirty water from the mop and direct the dirty water to enter the bucket 10 through the apertures of the wringer 12; and 8) repeat steps 1 through 7 inclusive.

Sub A3 Another embodiment of the invention is illustrated in Figs. 14 to 18 inclusive, wherein the mop wringer attachment is a side force mop wringer. The side impact mop wringer 108 includes a pressure plate 110 received on the interior of the wringer 108. The interior of the wringer 108 is defined by a perforated front wall 112, and spaced apart side walls 114, 116. The front wall 112 is integral with the front edges of the side walls 114, 116.

The lower end of the pressure plate 110 is adapted to receive a pivot pin 118. The pivot pin 118 is adjusted to extend through apertures 120 and 122 formed in the side walls 114, 116.

Sub A4 The side walls 114, 116 are provided respective outwardly extending rims 124, 126, as shown in Figs. 14 to 16. It will be noted from an examination of Figs. 16 to 18, the pressure plate 110 is provided with flanges 128, 130 extending outwardly from the pressure plate 110. Further, the side walls 114, 116 are provided with downwardly extending spaced apart legs 131 which are guided into slots 78 during the downward movement of the mop wringer 108 during the assemblage thereof on the mop bucket 10.

As will be discussed in greater detail hereinafter, the normal starting position of the pressure plate 110 is shown in Figs. 13 to 17 inclusive, while the completed wringing position of the plate 110 is shown in Fig. 17.

The mechanism for driving the pressure plate 110 includes a pivot arm 132 adapted to be received in apertures 134, 136 formed in side walls 114, 116. The pivot arm 132 includes an upwardly extending operating lever 138, and upwardly extending, spaced apart links 140, 142, suitably attached to the pivot arm 132.

The upper ends of the links 140, 142 are pivotally coupled to spaced apart connecting links 144, 146 by a pivot pin 148. The connecting links 144, 146 are pivotally coupled to the pressure plate 110 by a pressure plate pivot pin 150.

Suitable elastic cords 152, 154 such as, for example, rubber bands, are employed to urge the pressure plate 110 and the associated operating lever 138 in the normal vertical position, as illustrated in Figs. 14 to 17 inclusive. One end of each of the cords 152, 154 is connected in any suitable manner to the plate 110. The other end of each of the cords 152, 154 is attached to a stationary rod 156 extending between the side walls 114, 116 and suitably attached thereto. In all other respects, the mop wringer 108 is the same as that illustrated and described in respect of Fig. 1.

A typical cleaning operation utilizing the present mop bucket and side force mop wringer embodiment includes the following steps: 1) filling the mop bucket 10 with the desired quantity of washing liquid which is typically water having a detergent dissolve therein; 2) placing the mop wringer 108 on the edge 96 of the mop bucket 10 such that the legs 131 of the wringer 108 are suitably received within the slots 78; 3) permitting the wringer 108 to be lowered into the interior space of the mop bucket 10 until resting contact is made with the rear portion of the upper edge 96 of the mop bucket 10. At this stage, the lower edge of the rims 124, 126 of the side walls 114, 116 are disposed adjacent the upper edge 96 of the mop bucket 10. The side and front walls of the mop wringer 108 containing any perforations are now below the upper edge of the mop bucket. Thus, any liquid squeezed from the mop during the wringing operation will remain in the mop bucket and not be spilled onto the adjacent floor surface; 4) a mop is dipped into the clean washing liquid contained into the mop bucket 10; 5) the liquid containing mop is removed from the mop bucket 10 and moved over the surface of the floor to be cleaned; 6) insert the dirty mop into the mop wringer 108 between the pressure plate 110 and the front wall 112; 7) manually move the operating lever 138 from the position illustrated in Fig. 16 to the position illustrated in Fig. 17 causing the pressure plate to move forwardly toward the front wall 112 to expel the

dirty water form the mop and direct the dirty water to enter the bucket 10 through the apertures of the wringer 108; and 8) repeat steps 1 through 7 inclusive.

In accordance with the provisions of the patent statutes, the present invention has been described in what is considered to represent its preferred embodiment. However, it should be understood that the invention can be practiced otherwise than as specifically illustrated and described without departing from its spirit or scope.